



Lithium-ion Battery

DATA SHEET

Battery Model: [LIR14500](#)

Prepared	Authorized	Approved

UL Certified MH20555
Manufacturer: EEMB Co., Ltd.
Website: <http://eemb.com>

This Specification describes the requirements of the lithium ion battery with Lithium nickel manganese cobalt material supplied by EEMB Co., Ltd.

1.0 BASIC CHARACTERISTICS

1.1	Battery Type	LIR14500
1.2	Nominal Capacity	750mAh (0.2C ₅ discharge)
	Minimum Capacity	700mAh (0.2C ₅ discharge)
1.3	Nominal Voltage	3.7V
1.4	Storage Humidity	≤75% RH
1.5	Max Discharge Current	1500mA(2.0 C ₅ rate)
1.6	Initial Impedance	Max: 60mΩ
1.7	Charging Time	8.0hours (standard charge)
1.8	Quick Discharge Current	750mA (1.0 C ₅ rate)
1.9	Quick Charge Current	750mA (1.0 C ₅ rate)
1.10	Standard discharge	CC, 0.2 C ₅ A, 2.75V
1.11	Standard charge	CC/CV, 0.2 C ₅ A, 4.20V
1.12	End-of-charge Voltage	4.20V±0.05V
1.13	End-of-charge Current	0.01 C ₅ A (At CV mode)
1.14	End-of-discharge Voltage	2.75V
1.15	Weight	Approx. 19±1g
1.16	Operating Temperature	Charge: 0 ~ 45°C
		Discharge: -20°C ~ 60°C
1.17	Storage Temperature	-5°C ~ 35°C
1.18	Appearance	Without scratch, distortion, contamination and leakage.
1.19	Standard environmental condition	Temperature: 23±5°C
		Humidity: 45~75%RH
		Atmospheric Pressure: 86-106 KPA
1.20	Storage Humidity	≤75% RH

2. General Performance

No.	Item	Test Methods and Condition	Criteria
2.1	0.2C Capacity	After standard charging, rest battery for 10min, then discharging at 0.2C to voltage 2.75V, recording the discharging time.	≥ 300 min
2.2	Cycle Life	Constant current 0.5C charge to 4.2V, then constant voltage charge to current declines to 0.01C, rest 10min, constant current 0.5C discharge to 2.75V, rest 10min. Repeat above steps till continuously discharging capacity Higher than 80% of the Initial Capacities of the Cells.	≥ 300 times
2.3	Capability of keeping electricity	At $20 \pm 5^\circ\text{C}$, after standard charging, rest the battery for 28days, discharging at 0.2C to 2.75V, recording the discharging time.	≥ 240 min

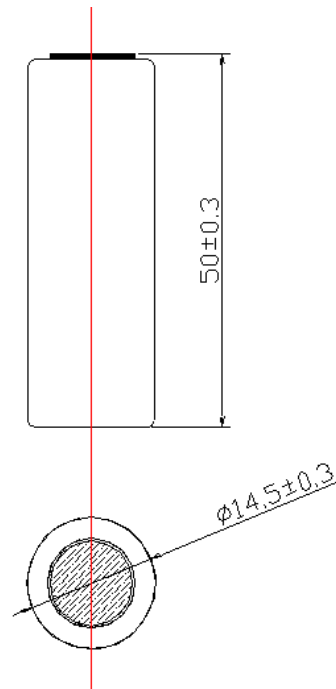
3. Acclimatization Characteristics

No.	Item	Test Methods and Condition	Criteria
3.1	Discharge at high temperature	After standard charging, rest the cells 4h at $60 \pm 2^\circ\text{C}$, then discharging at 1C to voltage 2.75V, recording the discharging time.	≥ 54 min
3.2	Discharge at low temperature	After standard charging, rest the cells for 16h at $-20 \pm 2^\circ\text{C}$, then discharging at 0.2C to voltage 2.75V, recording the discharging time.	≥ 210 min
3.3	Thermal shock	Put the cells in the oven. The temperature of the oven is to be raised at $5 \pm 2^\circ\text{C}$ per minute to a temperature of $130 \pm 2^\circ\text{C}$ and remains 30 minutes.	No fire, no smoke.

4. Safety Characteristics

No.	Item	Test Methods and Condition	Criteria
4.1	Over charge testing	At $23 \pm 5^\circ\text{C}$, charging cells with constant current 3C to voltage 5.0V, then with constant voltage 5.0V till current decline to 0. Stop test till cells temperature 10°C lower than max temperature.	No smoke or fire
4.2	Over discharge testing	At $23 \pm 5^\circ\text{C}$, According to the requirements of standard charge, the cells will be discharge to cut-off voltage, then connect with external load of 30 ohm for 24 hours.	No fire, no smoke, no leakage.
4.3	Short-circuit testing	At $23 \pm 5^\circ\text{C}$, After standard charging, connect cells anode and cathode by wire which impedance less than $50\text{m}\Omega$, keep 6h..	No smoke or fire

5. Battery Dimension



6. Protection

When Li-ion rechargeable battery is used over the permitted voltage or current, electrolyte may disassemble, and this case will affect safety performance of Li-ion rechargeable battery. So protection circuit module was used in order to prevent overcharge, over discharge and over current.

WARNINGS!

- 1) Do not immerse the battery in water or seawater, and keep the battery in a cool dry surrounding if it stands by.
- 2) Do not use or leave the battery near a heat source as fire or heater
- 3) When recharging, use the battery charger specifically for that purpose
- 4) Do not reverse the position (+) and negative (-) terminals
- 5) Do not connect the battery to an electrical outlet
- 6) Do not discard the battery in fire or heat it
- 7) Do not short-circuit the battery by directly connecting the positive (+) and negative (-) terminal with metal objects such as wire.
- 8) Do not transport or store the battery together with metal objects such as necklaces, hairpins etc.
- 9) Do not strike or throw the battery
- 10) Do not directly solder the battery and pierce the battery with a nail or other sharp object.

CAUTIONS!

- 1) Do not use or leave the battery at very high temperature (for example, at strong direct sunlight or in a vehicle in extremely hot weather). Otherwise, it can overheat or fire or its performance will be degenerate and its service life will be decreased.
- 2) Do not use it in a location where static electricity is great, otherwise, the safety devices may be damaged, causing hidden trouble of safety.
- 3) If the battery leaks, and the electrolyte get into the eyes. Do not rub eyes, instead, rinse the eyes with clean running water, and immediately seek medical attention. Otherwise, it may injure eyes or cause a loss of sight.
- 4) If the battery gives off an odor, generates heat, becomes discolored or deformed, or in any way appear abnormal during use, recharging or storage, immediately remove it from the device or battery charger and stop using it.
- 5) In case the battery terminals are dirt, clean the terminals with a dry cloth before use. Otherwise power failure or charge failure may occur due to the poor connection with the instrument.
- 6) Be aware discarded batteries may cause fire, tape the battery terminals to insulate them.

7. Battery operation instruction**7.1 Charging**

Charging current: Cannot surpass the biggest charging current which in this specification stipulated.

Charging voltage: Does not have to surpass the highest amount which in this specification book stipulated to decide the voltage.

Charge temperature: The battery must carry on the charge in the ambient temperature scope which this specification book stipulated.

Uses the constant electric current and the constant voltage way charge, the prohibition reverse charges. If the battery positive electrode and the cathode meet instead, can damage the battery.

7.2 Discharging current

The discharging current does not have to surpass this specification book stipulation the biggest discharging current, the oversized electric current electric discharge can cause the battery capacity play to reduce and to cause the battery heat.

7.3 discharge temperature

The battery discharge must carry on in the ambient temperature scope which this specification book stipulated

7.4 Over-discharges

After the short time excessively discharges charges immediately cannot affect the use, but the long time excessively discharges can cause the battery the performance, battery function losing. The battery long-term has not used, has the possibility to be able to be at because of its automatic flashover characteristic certain excessively discharges the condition, for prevented excessively discharges the occurrence, the battery should maintain the certain electric quantity.

7.5 Storing the Batteries

The battery should store in the product specification book stipulation temperature range. If has surpasses above for six months the long time storage, suggested you should carry on additional charge to the battery.

8. Period of Warranty

The period of warranty is one year from the date of shipment. Guarantee to give a replacement in case of cells with defects proven due to manufacturing process instead of the customers' abuse and misuse.

9. Other Chemical Reaction

Because batteries utilize a chemical reaction, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, if the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage. If the batteries cannot maintain a charge for long periods of time, even when they are charged correctly, this may indicate it is time to change the battery.

10. Note

Any other items which are not covered in this specification shall be agreed by both parties.

! Special Notice

Keep the cells in **50% charged state** during long period storage. We recommend to charge the battery up to 50% of the total capacity every 3 months after receipt of the battery and maintain the voltage 3.7~4.0V. And store the battery in cool and dry place.

Note: Any representations in this brochure concerning performance are for informational purposes only and are not construed as warranties either expressed or implied, of future performance.